PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2004/005498	International filing date *(day/month/year)* 21.05.2004	Priority date *(day/month/year)* 09.06.2003
International Patent Classification (IPC) or both national classification and IPC C11D3/39, C11D3/16, C11D3/50		
Applicant UNILEVER PLC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25.11.2004	08.06.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Pfannenstein, H Telephone No. +49 89 2399-8217

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP2004/005498

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-24	as originally filed

Claims, Numbers

1-17	as originally filed
18	filed with telefax on 17.11.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-18
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-18
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-18
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

1) Reference is made to the following documents:
   D1 US-A-2003/0054968
   D2 WO-A-9916802
   D3 WO-A-0116271
   D4 WO-A-03033635.

2) D1 (examples, claims) describes bleaching compositions free of peroxygen bleach comprising a bleach catalyst (metal complex for bleaching a substrate) for atmospheric oxygen, 0,46% perfume, 0,1-1,04 and 5,5% antioxidant including citric acid (which is also an antioxidant), adjuncts, carrier, and after storage certain amounts of octanal, heptanal and hexanal. They are measured in a SPME GC MS head space on HP 6890mass spectrometer, the values are given without a unit. Claim 1 differs from D1 in that in claim 1 at least 0,01% aldehydic perfume is specified.

   D2 (example 11TT) exemplifies liquid bleaching compositions free of peroxygen bleach comprising 0,5% copolymeric compound having aldehyde groups (perfume), 5% mono ethanolamine and 1,5% citric acid (both are antioxidants), adjuncts, carrier and a ligand such as citric acid and DTPMP. Said ligands are not capable of forming a complex for air bleach according to the applicant. Claim 1 differs from D2 in that the ligand is different.

   Thus the subject-matter of claims 1-18 is novel over D1 and D2.

3) The present application relates to air bleaching compositions that have improved storage properties. The examples demonstrate that aldehydic perfumes show improved storage stability if additionally an antioxidant is present.

   D3 (example 3, composition 9) describes bleaching compositions free of peroxygen bleach comprising a bleach catalyst (metal complex for bleaching a substrate) for atmospheric oxygen, 1,6% perfume, 7,56% mono ethanolamine which is an antioxidant, adjuncts and carrier. Claim 1 differs from D3 in that in claim 1 the perfume comprises at least 0,01% of an aldehydic perfume.

D3 relates to chemically and physically storage stable bleaching compositions. In D3 (page 67) sequestrants like EDTA and EDTMP may be added to improve the stability of sensitive ingredients such as perfumes. Details about perfumes are not disclosed therein.

D1, D2 and D4 relate to different problem compared to the present application. D4 discloses compositions for long lasting benefit on substrates comprising aldehydic perfumes and an amine. D1 relates to reduced malodour of the bleaching composition comprising an unsaturated surfactant. D2 relates to delayed release of perfume.

Thus, the subject-matter of claims 1-18 is inventive (Article 33(3) PCT).

C4314 (C) WO

Amended 24 May 2005

We claim:

1. A bleaching composition comprising:

(a) a transition metal air bleach catalyst, the bleaching composition containing less that 1 % wt/wt total concentration of peracid or hydrogen peroxide or source thereof,

(b) between 0.001 to 3 wt/wt % of a perfume composition said perfume composition comprising at least 0.01 wt % of an aldehydic perfume, and

(c) an antioxidant in the range from 0.0001 to 20 wt/wt %,

(d) the balance carriers and adjunct ingredients to 100 wt/wt % of the total bleaching composition.

2. A bleaching composition according claim 1, wherein the antioxidant is selected from:

(i) an phenolic antioxidant, the phenolic antioxidant present in the range 0.0001 to 3 % wt %; and,

(ii) an amine antioxidant, the amine antioxidant in the range from 0.0001 to 20%.

3. A bleaching composition according claim 2, wherein the amine antioxidant is an amine alcohol.

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4. A bleaching composition according to claim 3, wherein the amine alcohol is selected from the group consisting of: 2-amino-2-methyl-1-propanol, tri-ethanol amine, tri-methanol amine, mono-ethanol amine, diethanol amine, and methylanthranilate.

5. A bleaching composition according to claim 2, wherein the antioxidant is a hindered phenol.

6. A bleaching composition according to claim 5, wherein the antioxidant is selected from the group consisting of: 2, 6-di-tert-butyl hydroxy toluene, α-tocopherol, Ethoxyquine and 6-hydroxy-2,5,7,8-tetra-methylchroman-2-carboxylic acid, and lignosulphonic acid.

7. A bleaching composition according to claim 6, wherein the antioxidant is 2, 6-di-tert-butyl hydroxy toluene.

8. A bleaching composition according to claim 1, wherein the antioxidant is ascorbic acid.

9. A bleaching composition according to claim 5 to 8, wherein the antioxidant is present in the bleaching composition in the range from 0.001 to 2 wt %.

10. A bleaching composition according to any preceding claim, wherein the bleaching composition is a liquid.

11. A bleaching composition according to any preceding claim, comprising between 0.1 to 2 wt/wt % of a perfume composition.

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12. A bleaching composition according to any preceding claim , wherein said perfume composition comprises at least 0.1 wt % of an aldehydic perfume.

13. A bleaching composition according to claim 12, wherein said perfume composition comprises at least 1.0 wt % of an aldehydic perfume.

14. A bleaching composition according to claim 13, wherein the perfume composition comprises at least 5 wt % of an aldehydic perfume.

15. A bleaching composition according to any one of claims 1 to 9 and 11 to 14, wherein the bleaching composition is a solid bleaching composition.

16. A bleaching composition according to any preceding claim, wherein the aldehydic perfume is selected from the group consisting of: trifernal, lilial, citronellal, cyclosal, heliopropanal, zestover, aldehyde C12, tridecylenicaldehyde, cyclosia base, and octenal.

17. A method of bleaching a textile stain, comprising the steps of treating a substrate with the bleaching composition as defined in any preceding claim in an aqueous environment, rinsing the substrate and drying the substrate.

18. A bleaching composition comprising:

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(a) a transition metal air bleach catalyst, the bleaching composition containing less that 1 % wt/wt total concentration of peracid or hydrogen peroxide or source thereof;

(b) between 0.001 to 3 wt/wt % of a perfume composition said perfume composition comprising at least 0.01 wt % of an aldehydic selected from the group consisting of: trifernal, lilial, citronellal, cyclosal, heliopropanal, zestover, aldehyde C12, tridecylenicaldehyde, cyclosia base, and octenal;

(c) an antioxidant in the range from 0.0001 to 20 wt/wt %; and,

(d) the balance carriers and adjunct ingredients to 100 wt/wt % of the total bleaching composition.

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because it is the oxygen in the air that provides the bleaching species used by catalyst to bleach the substrate stain.

The bleach catalyst per se may be selected from a wide range of transition metal complexes of organic molecules (ligands). In typical washing compositions the level of the organic substance is such that the in-use level is from 0.05 μM to 50 mM, with preferred in-use levels for domestic laundry operations falling in the range 1 to 100 μM. Higher levels may be desired and applied in industrial textile bleaching processes.

Suitable organic molecules (ligands) for forming complexes and complexes thereof are found, for example in:
DE 19755493; EP 999050; WO-A-9534628; EP-A-458379; EP 0909809; United States Patent 4,728,455; WO-A-98/39098; WO-A-98/39406, WO 9748787, WO 0029537; WO 0052124, and WO0060045 the complexes and organic molecule (ligand) precursors of which are herein incorporated by reference. An example of a preferred catalyst is a transition metal complex of MeN4Py ligand (N,N-bis(pyridin- 2-yl-methyl)-1,1-bis(pyridin-2-yl)-1-aminoethane).

The ligand forms a complex with one or more transition metals, in the latter case for example as a dinuclear complex. Suitable transition metals include for example: